MFRC

Midwest Forensics Resource Center

Training and Professional Development
Program Summary

August 2009

Acknowledgements

Table of Contents

Midwest Forensics Resource Center (MFRC)
Training and Professional Development Program

Introduction

The Midwest Forensics Resource Center (MFRC) develops and delivers forensic science training and professional development opportunities for the benefit of publicly-funded crime laboratories and law enforcement organizations. These opportunities have been directed primarily to forensic scientists in the Midwest, but are also made available nationally as resources permit. Most training has been conducted centrally on the Iowa State University campus in Ames, IA. Other training has been held at the Nebraska State Patrol Academy, the Lawrence (Kansas) Police Department, the Iowa Division of Criminal Investigation Crime Laboratory, the Kansas City (Missouri) Police Department Regional Training facility, the Illinois State Police Crime Laboratory in Chicago, and Michigan State University in Lansing.

The MFRC follows training delivery and development procedures established with the National Institute of Justice and the Community Oriented Policing Program. Potential training is identified through formal and informal interactions with MFRC partners. These occur via Midwest Crime Laboratory Director's meetings, the MFRC's Annual meetings, MFRC advisory group communications, requests from individual forensic scientists, discussions held at regional and national meetings, and formal surveys. Suggestions requested most frequently are validated through the MFRC's advisory network. Some can be implemented through established subject matter experts and existing training, while others require partner-guided modification of existing programs or development of new curriculum. The overall administration of these training and professional development opportunities is based on continuous feedback from the MFRC's crime laboratory partners and federal funders.

The MFRC's partners have requested that training respond to their emerging issues rather than operate on a fixed schedule of recurring classes, and that the MFRC deliver and develop training in partnership with forensic professional associations and recognized authorities. As a result, the MFRC's history of training and professional development covers a broad range of disciplines and topics and shows a preference for collaborative training efforts. A recent Training Delivery and Development award from the National Institute of Justice has required delivery and development of a sequence of classes in Bloodstain Pattern Analysis and Toxicology. The MFRC delivers its training at no cost to employees of publicly-funded crime laboratories and law enforcement organizations.

Training Summaries

The following training summaries provide information on the forensic training and professional development supported by the MFRC. The *History* section lists all of the training delivered to date. The *Training Summaries* section provides brief course descriptions and outlines for selected classes.

History

This section shows the history of MFRC-supported training projects, including program dates, training topics, names of subject matter experts, class locations, and selected class status details.

2009

Advanced Bloodstain Pattern Interpretation   March 16-19, 2009
Subject matter experts:
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory System
- Kevin Winer, Section Chief, Kansas City (MO) Police Department Crime Laboratory

Class status:
- Enhanced class
- Delivered in Lawrence, KS at the LPD Training Facility

Basic Bloodstain Pattern Interpretation   February 9-13, 2009
Subject matter experts:
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory System
- Kevin Winer, Section Chief, Kansas City (MO) Police Department Crime Laboratory

Class status:
- Existing class
- Delivered in Kansas City, MO at the KCPD Regional Training Facility

Best Practices in Forensic Science Management, Part 2/3   February 17-18, 2009
Subject matter experts:
- Anthony Hendrickson, PhD, Dean, Creighton University Business College
- Laura Mizaur, Faculty, Creighton University

Class status:
- Prototype class
- Developed at MFRC request
- Delivered in Omaha, NE
- To be repeated

Best Practices in Forensic Science Management, Part 3/3   May 26-28, 2009
Subject matter experts:
- Anthony Hendrickson, PhD, Dean, Creighton University Business College
- Laura Mizaur, Faculty, Creighton University

Class status:
- Prototype class
- Developed at MFRC request
- Delivered in Omaha, NE
- To be repeated

Bloodstain Pattern Analysis Symposium   August 25-27, 2009

Subject matter coordinators:
- Jeff Gurvis, Independent Bloodstain Pattern Analyst
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory system
- Kevin Winer, Trace Section Supervisor, Kansas City Police Department Crime Laboratory

Subject matter experts:
- David Baldwin , Midwest Forensics Resource Center, Chair of SWGSTAIN
- Larry Barksdale, Lincoln (Nebraska) Police Department
- Iris Dally, Bevel, Gardner, & Associates
- Donald Doller, Suffolk County (New York) Crime Laboratory
- Carolyn Gannett, San Diego County Sheriff's Crime Laboratory
- Ross Gardner, Bevel, Gardner, & Associates
- Stuart James, James & Associates
- Pat Laturnus, RCMP (Retired)
- Jeremy Morris, Johnson County Crime Laboratory
- Jon Nordby, PhD, D-ABMDI, Final Analysis Forensics
- Brian Yamashita, RCMP

Class status:
- Seventh in a series of forensic symposia
- Held in Ames, IA

DNA Symposium   June 9-11, 2009

Subject matter experts:
- Keith Findley, JD, University of Wisconsin Law School
- Ann Gross, Minnesota Bureau of Criminal Apprehension Laboratory
- Danielle Hankinson, Michigan State Police Crime Laboratory
- Rockne Harmon, Senior Deputy District Attorney for Alameda County, CA (Retired)
- Brian Hoey, Section Chief, Missouri State Highway Patrol Crime Laboratory
- Sarah Johnson, Ontario Centre of Forensic Sciences
- Kerry Opel, PhD, Upper Iowa University
- Doug Saul, DuPage County Sheriff's Crime Lab
- Mike Schmit, Iowa Division of Criminal Investigation Criminalistics Laboratory
- Thomas A. Wahl, Forensic DNA Facility, North Dakota State University
- Jason Wyckoff, Missouri State Highway Patrol Crime Lab
- Tim Zolandz, Federal Bureau of Investigation

Class status:
- Sixth in a series of forensic symposia
- Organized in partnership with the MAFS DNA section
- Held in Ames, IA

2008

Best Practices in Forensic Science Management, Part 1/3   December 1-3, 2008

Subject matter experts:
- Anthony Hendrickson, PhD, Dean, Creighton University Business College
- Laura Mizaur, Faculty, Creighton University

Class status:
- Prototype class
- Developed at MFRC request
- Delivered in Omaha, NE
- To be repeated

Bloodstain Pattern Interpretation for DNA Analysts   October 1, 2008

Subject matter experts:
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory System
- Kevin Winer, Section Chief, Kansas City (MO) Police Department Crime Laboratory

Class status:
- Prototype class
- Developed by the presenters at MFRC request
- Delivered at the MAFS Annual Meeting
- Future delivery expected

Designing and Implementing a Program for Estimating   November 4-5, 2008
Measurement Uncertainty in Forensic Laboratories

Subject matter expert:
- Beth Mishalanie, PhD, USEPA Forensic Laboratory

Class status:
- Prototype class
- Developed at MFRC request
- Delivered in Ames, IA
- Repeated by developer

Direct Analysis in Real Time (DART) Mass Spectroscopy   August 12-13, 2008
for Forensic Analyses

Subject matter expert:
- Chip Cody, JEOL Corporation
- Roger Jones, PhD, USDOE Ames Laboratory
- Robert Steiner, Virginia Department of Forensic Science
- Peter Stout, PhD, Triangle Research Institute

Class status:
- Prototype class
- Organized in partnership with the National Forensic Science Technology Center and the Forensic Technology Center of Excellence
- Developed and delivered in partnership with the Virginia Department of Forensic Science, the Triangle Research Institute, and the JEOL Corporation
- Delivered in DART mass spectroscopy facilities, and a multi-media training facility in the USDOE Ames Laboratory
- Repeated as an online program hosted by the NFSTC

Forensic Analysis of Low Explosives   June 23-27, 2008
Subject matter experts:
- Chris Bommarito, Michigan State Police Crime Laboratories
- John Goodpaster, PhD, Indiana University-Purdue University-Indianapolis
- William Randle, Missouri State Highway Patrol Crime Laboratories
- Dave Szymanski, PhD, Michigan State University

Class status:
- Prototype class
- Developed in partnership with Chris Bommarito
- Delivered in microscopy and chemistry laboratory facilities of Michigan State University
- Future delivery of class anticipated

Forensic Raman Spectroscopy   October 1, 2008
Subject matter experts:
- Craig Beveroth, ThermoFisher Corp.

Class status:
- Prototype class
- Developed by presenter at MFRC/MAFS request
- Delivered at the MAFS Annual Meeting

Implementing Process Change in Crime Laboratories   October 14-15, 2008
Subject matter experts:
- Joe Brancaccio, Brazos Group

Class status:
- Prototype class
- Developed at MFRC request
- Delivered in Ames, IA
- To be repeated by developer

Introduction to Business Process Mapping (modified)   October 7-8, 2008
Subject matter experts:
- Joe Brancaccio, Brazos Group

Class status:
- Existing class
- Delivered at the Association of Forensic Quality Assurance Managers national meeting in Virginia Beach, VA

Symposium on Special Topics in Bloodstain Pattern Analysis   February 5-7, 2008
Subject matter experts:
- Chris Bommarito, Michigan State Police
- Rhonda Craig, Federal Bureau of Investigation
- Carolyn Gannett, San Diego Sheriff's Department
- Mike Illes, Ontario Provincial Police
- Paul Kish, Private Consultant
- Terry Laber, Minnesota Bureau of Criminal Apprehension
- Pat Laturnus, RCMP (Retired)
- Tony Onorato, Federal Bureau of Investigation
- Kevin Winer, Kansas City Police Department
- Toby Wolson, Miami-Dade Police Crime Laboratory

Class status:
- Third in a series of symposia
- Developed in partnership with representatives from SWGSTAIN, IABPA, and IAI
- Delivered at Iowa State University facilities in Ames, IA

Symposium on Special Topics in Questioned   September 29-
Document Analysis   October 1, 2008
Subject matter experts:
- Janette Guscott, Aurora County Crime Laboratory
- Debra Hale, Forensic Document Examiner
- Gerald Leporte, US Secret Service Laboratory
- Jane Lewis, Wisconsin State Crime Laboratory
- Gary Licht, Iowa DCI Crime Laboratory
- Kevin McDowell, West Virginia State Police
- Gordon Menzies Jr, Virginia Division of Forensic Sciences
- Larry A. Olson, IRS Laboratory
- Frederick Panhorst, US Army Criminal Investigation Laboratory
- Gerald Richards, Federal Bureau of Investigation (Retired)
- Ellen Schuetzner, Forensic Document Examiner
- Todd Welch, Michigan State Police Crime Laboratories
- Pam Zilly, Director, Nebraska State Patrol Crime Laboratories

Class status:
- Fifth in a series of forensic symposia
- Organized in partnership with the MAFS Questioned Documents Section
- Delivered at the DCI Crime Laboratory in Ankeny, IA

Toxicology Symposium   August 19-21, 2008
Subject matter experts:
- Dan Anderson, Los Angeles Coroner's Office
- Rod McCutcheon, Bexar County Medical Examiner's Office
- Christine Moore, PhD, Director of Research, Immunalysis Corp.
- Tim Rohrig, PhD, Director, Sedgwick Regional Forensic Science Center

Class status:
- Fourth in a series of symposia
- Program developed by the four subject matter experts
- Delivered in Ames, IA

2007

Advanced Palm Print Comparison Techniques   August 6-9, 2007
Subject matter expert:
- Ron Smith, Ron Smith & Associates

Class status:
- Existing class
- Delivered at Iowa State University facilities in Ames, IA

Basic Bloodstain Pattern Interpretation   December 3-7, 2007
Subject matter experts:
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory System
- Kevin Winer, Section Chief, Kansas City (MO) Police Department Crime Laboratory

Class status:
- Existing class
- Delivered in partnership with the Nebraska State Police at Nebraska State Police Training Academy facilities in Grand Island, NE

Basic Hair Examination and Analysis for Forensic DNA Analysts   June 28-29, 2007
Subject matter expert:
- Richard Bisbing, McCrone College of Microscopy

Class status:
- Existing class
- Delivered in partnership with the McCrone College of Microscopy
- Delivered in microscopy facility in Chicago, IL

Detection, Recovery, and Examination of Footwear   March 26-30, 2007
Impression Evidence
Subject matter expert:
- William Bodziak, Federal Bureau of Investigation (Retired)

Class status:
- Existing class
- Delivered at the USDOE Ames Laboratory in Ames, IA

Examination and Comparison of Tire Track Evidence   October 2-4, 2007
Subject matter expert:
- Dwane Hildebrand, Ron Smith & Associates

Class status:
- Existing class
- Delivered at the USDOE Ames Laboratory in Ames, IA

Forensic Applications of Molecular Chemical Imaging   November 13-14, 2007
Subject matter experts:
- Joe Stephens, U.S. Secret Service
- Rebecca Schuler, ChemImage Corporation
- Jim Jones, ChemImage Corporation

Class status:
- Prototype class
- Delivered in partnership with the U.S. Secret Service and ChemImage Corporation
- Delivered at training and laboratory facilities of the USDOE Ames Laboratory in Ames, IA

Forensic Textile Fiber Examination and Comparison   June 25-27, 2007
Subject matter expert:
- Max Houck, West Virginia Forensic Initiative

Class status:
- Existing class
- Delivered in partnership with the West Virginia Forensic Initiative
- Delivered at microscopy facilities of the McCrone College of Microscopy in Chicago, IL

Intermediate Crime Scene Reconstruction   February 6-9, 2007
Subject matter experts:
- Tom Bevel, TBI & Associates
- Ross Gardner, TBI & Associates

Class status:
- Existing class
- Class modified for this offering
- Delivered at laboratory facilities of the USDOE Ames Laboratory in Ames, IA

Intermediate Forensic Digital Imaging Techniques (modified)   March 12-16, 2007
Subject matter expert:
- David Witzke, Foray Technologies

Class status:
- Existing class
- Class modified for this offering
- Delivered at computer laboratory facilities of Iowa State University

Questioned Documents at the Crime Scene   April 16, 2007
Subject matter expert:
- Gerry LaPorte, U.S. Secret Service

Class status:
- Prototype class
- Developed in partnership with the U.S. Secret Service
- Delivered at a multimedia facility of Iowa State University; recorded as MFRC DVD

Symposium on Advanced Issues in Forensic Drug Chemistry   May 8-10, 2007

Subject matter experts:

- Adam Bene and Sean Brooks, Missouri State Highway Patrol Crime Laboratories
- Joe Bono, Director, US Secret Service Laboratory
- Terry Dal Cason, DEA
- James DeFrancesco, PhD, DEA
- Claire Donaghey, DuPage County Crime Laboratory
- Brooke Ehlers, Miami Valley Crime Laboratory, Ohio
- Sue Gross, Minnesota Bureau of Criminal Apprehension
- Christopher Krug, Johnson County (KS) Crime Laboratory
- Tim McKibben, Colorado Bureau of Investigation
- Rick Paulus, Illinois State Police Crime Laboratories

Class status:

- Second in a series of symposia
- Developed in partnership with the MAFS Drug Chemistry Section
- Delivered on the Iowa State University campus in Ames, IA

2006

Advanced Crime Scene Reconstruction (modified)   April 18-21, 2006
Subject matter experts:
- Tom Bevel, TBI & Associates
- Ross Gardner, TBI & Associates

Class status:
- Prototype class
- Delivered at USDOE Ames Laboratory facilities in Ames, IA

Advanced Trace Evidence Symposium   June 6-9, 2006
Subject matter experts:
- Mark Ahonen, Indiana State Police
- Chris Bommarito, Michigan State Police, MAFS
- Kathy Boone, Indiana State Police
- Lee Brun-Conti, Bureau of Alcohol, Tobacco, Firearms
- Bill Chapin, McCrone Associates
- Jamie Crippin, Western Forensic Law Enforcement Training Center
- Sue Gross, Minnesota Bureau of Criminal Apprehension
- Thomas Hopen, Bureau of Alcohol, Tobacco, Firearms and Explosives
- Damon Lettich, Indiana State Police
- Cheryl Lozen, Michigan State Police
- Ted Manasian, Ohio Bureau of Criminal Identification & Investigation
- Amy Michaud, Bureau of Alcohol, Tobacco, Firearms
- Skip Palenik, Microtrace
- William Randle, Missouri State Highway Patrol
- Scott Ryland, Florida Department of Law Enforcement
- Glenn Schubert, Illinois State Police
- Jenny Smith, Missouri State Highway Patrol
- Scott Stoeffler, McCrone Associates
- David Szymanski, Michigan State University
- Mike Trimpe, Hamilton County Coroner's Office

Class status:
- Prototype class
- Developed and delivered in partnership with the Midwest Association of Forensic Scientists Trace Evidence Section
- Repeated in subsequent symposia

Basic Bloodstain Pattern Interpretation   November 13-17, 2006
Subject matter experts:
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory System
- Kevin Winer, Section Chief, Kansas City (MO) Police Department Crime Laboratory

Class status:
- Existing class
- Delivered at the DCI Crime Laboratory in Ankeny, IA

Basic Courtroom Testimony   October 3-4, 2006

Subject matter expert:
- Dwane Hildebrand, Ron Smith & Associates

Class status:
- Existing class
- Delivered in partnership with the IAI and Ron Smith & Associates
- Delivered at the DCI Crime Laboratory in Ankeny, IA

Forensic Applications of Fourier Transform Infrared   August 9-10, 2006
Spectroscopy (FTIR): Two-day workshop

Subject matter experts:
- Eric Bukowski, PhD, Shimadzu Corporation
- Shannon Richard, MS, Shimadzu Corporation

Class status:
- Existing class
- Delivered at the USDOE Ames Laboratory training and chemistry facilities in Ames, IA

Forensic Digital Imaging Techniques (modified)   March 13-17, 2006

Subject matter expert:
- David Witzke, Foray Technologies

Class status:
- Existing class
- Techniques modified for this offering
- Delivered at a computer laboratory at Iowa State University in Ames, IA

Preservation of Deteriorating Documents   May 10-12, 2006

Subject matter experts:
- Gary Licht, Iowa Division of Criminal Investigation Crime Laboratory, MAFS QD Section Head
- Hillary Seo, PhD, Iowa State University Documents Conservation Laboratory

Class status:
- Prototype class
- Organized in partnership with the MAFS Questioned Documents Section, the Iowa DCI Crime Laboratory, and the ISU Library
- Delivered at conservation laboratories at Iowa State University in Ames, IA and the DCI Crime Laboratory in Ankeny, IA

2005

Advanced Chemical Latent Print Development   December 13-16, 2005
Subject matter experts:
- Brian Dalrymple, RCMP (Retired)
- Leslie Hammer, Alaska State Police

Class status:
- Prototype class
- Delivered in partnership with IAI and Ron Smith & Associates
- Delivered at USDOE Ames Laboratory facilities and an Iowa State University Department of Chemistry teaching laboratory in Ames, IA
- Repeated by the developers

Advanced Fire Debris Analysis   August 8-12, 2005
Subject matter expert:
- Carl Chasteen, Director of the Fire and Arson Laboratory of the Florida State Fire Marshall's Office; Chair, Technical Working Group on Fire and Explosives

Class status:
- Prototype class
- Delivered at an Iowa State University computer laboratory in Ames, IA
- Further developed and repeated by the subject matter expert

Basic Online Technical Skills   June 27-July 1, 2005
Subject matter expert:
- National White Collar Crime Center

Class status:
- Existing class
- Delivered in partnership with the National White Collar Crime Center
- Delivered at USDOE Ames Laboratory facilities in Ames, IA

Forensic Applications of Fourier Transform Infrared   November 2-3, 2005
Spectroscopy (FTIR): Two-day workshop
Subject matter experts:
- Eric Bukowski, PhD, Shimadzu Corporation
- John Monti, PhD, Shimadzu Corporation
- Shannon Richard, MS, Shimadzu Corporation

Class status:
- Prototype class
- Delivered in partnership with Shimadzu Corporation
- Delivered at USDOE Ames Laboratory facilities in Ames, IA
- Repeated by the developers

Laboratory Support for the 40-hour Certification Program   June 22, 2005
for Clandestine Laboratory Investigators
Subject matter expert:
- Nila Bremmer, Iowa Division of Criminal Investigation Crime Laboratory

Class status:
- Existing class
- Organized in partnership with the Central Iowa Drug Task Force and Iowa Division of Criminal Investigation Crime Laboratory
- Delivered by a DCI forensic drug chemist
- Delivered at an USDOE Ames Laboratory chemistry laboratory in Ames, IA

Scanning Electron Microscopy and Energy Dispersive   April 26-29, 2005
Spectroscopy for Forensic Scientists: Workshop
Subject matter experts:
- Chris Bommarito, Michigan State Police Crime Laboratory
- Scott Chumbley, PhD, Iowa State University
- Frank Platek, U.S. Food and Drug Administration
- Mike Trimpe, Hamilton County Coroner's Office
- Dennis Ward, Federal Bureau of Investigation

Class status:
- Prototype class
- Developed by a partnership of MAFS, ISU, the Michigan State Police Crime Laboratories, the U.S. Food and Drug Administration, the Hamilton County Coroner's Office, and the Federal Bureau of Investigation
- Delivered in a National Science Foundation-funded interactive SEM facility in the College of Engineering, on the ISU campus in Ames, IA

What Crime Laboratories Know About the Synthesis of   September 23, 2005
Methamphetamine that the Manufacturers of Pseudoephedrine Do Not: Crime Laboratory
Lessons from Legislative Hearings on the Sale of Pseudoephedrine in Iowa: Video Conference
Subject matter experts:
- Sandra Stoltenow, Iowa Division of Criminal Investigation Crime Laboratory
- Nila Bremmer, Iowa Division of Criminal Investigation Crime Laboratory

Class status:
- Existing class
- Organized in partnership with the Iowa DCI Crime Laboratory and the Missouri Association of Crime Laboratory Directors
- Delivered from Iowa State University video conference facilities to a network of crime laboratory interactive video conference facilities in the state of Missouri

2004

Basic Fire Debris Analysis: Workshop   August 30-
                                                               September 3, 2004

Subject matter expert:
- Jamie Crippin, Director, Western Law Enforcement Training Center

Class status:
- Existing class
- Delivered at USDOE Ames Laboratory facilities and an Iowa State University Department of Chemistry teaching laboratory in Ames, IA

Forensic Analysis of GHB and 1,4-BD   September 28, 2004

Subject matter expert:
- James DeFrancesco, PhD, Drug Enforcement Administration

Class status:
- Existing class
- Delivered by a DEA forensic scientist in Illinois State Police Crime Laboratory facilities
- Repeated in an MFRC DVD

2003

Capillary Electrophoresis   April 10, 2003

Subject matter expert:
- Edward Yeung, PhD, USDOE Ames Laboratory and Iowa State University

Class status:
- Prototype class
- Developed by USDOE Ames Laboratory scientist
- Delivered at DCI Crime Laboratory facilities in Des Moines, IA
- Repeated in an MFRC DVD

Crime Laboratory Ethics   October 13, 2003

Subject matter expert:
- Dan Gunnel, Illinois State Police Crime Laboratory

Class status:
- Existing class
- Delivered at DCI Crime Laboratory facilities in Des Moines, IA
- Repeated in an MFRC DVD

Forensic Glass Examination and Comparison, with a Special   July 22, 2003
Focus on Elemental Analysis Samples by ICP-MS and LA-ICP-MS:
A Class for Practicing Forensic Scientists

Subject matter experts:
- Jose Almiral, PhD, Florida International University, Forensic Research Institute
- R.S. Houk, PhD, USDOE Ames Laboratory and Iowa State University
- Tatiana Trejos, MS, Florida International University, Forensic Research Institute

Class status:
- Prototype class
- Developed and delivered by Florida International University Forensic Research Institute and scientists of the USDOE Ames Laboratory
- Delivered in classroom and laboratory facilities at USDOE Ames Laboratory in Ames, IA

Management Perspective on Digital Evidence   December 16-17, 2003

Subject matter experts:
- Carrie M. Whitcomb, Director, National Center for Forensic Science
- Mark Pollitt, National Center for Forensic Science

Class status:
- Prototype class
- Developed and delivered by the National Center for Forensic Science
- Initially delivered at the USDOE Ames Laboratory in Ames, IA
- Class repeated

2002

Mass Spectrometry   November 14, 2002

Subject matter expert:
- R.S. Houk, PhD, USDOE Ames Laboratory and Iowa State University

Class status:
- Prototype class
- Developed by an USDOE Ames Laboratory scientist
- Delivered at Iowa DCI facilities in Des Moines, IA
- Repeated in an MFRC DVD

Training Summaries

The following section shows summaries of MFRC training classes. These are categorized by:
- Analytical Instruments
- Bloodstain Interpretation and Crime Scene Reconstruction
- Digital Evidence
- Forensic Quality Assurance and Management
- Forensic Symposia
- Impression Evidence
- Trace Evidence

Information for each class includes a brief class description and condensed agenda. Not all classes offered by the MFRC are shown in the examples. For a full list of classes offered, please see the *History* section.

Analytical Instruments

The Analytical Instruments classes include:
- Direct Analysis in Real Time Spectrometry (DART)
- Fourier Transform Infrared Spectroscopy (FTIR)
- Molecular Chemical Imaging
- Scanning Electron Microscopy-Energy Dispersive Spectroscopy (SEMS/EDS)

These classes pair theory in the classroom with hands-on laboratory delivery methods. Partners or co-sponsors include:
- Midwest Association of Forensic Scientists
- An FTIR equipment manufacturer
- U.S. Secret Service
- A molecular chemical imaging system manufacturer
- National Forensic Science Technology Center

Subject matter experts were drawn from the community of forensic scientists. These include recognized subject matter experts from:
- ChemImage Corporation
- Federal Bureau of Investigation
- Hamilton County Coroner's Laboratory
- Iowa State University
- JEOL
- Michigan State Police Crime Laboratory System
- Shimadzu Corporation
- Triangle Research Institute
- USDOE Ames Laboratory
- U.S. Food and Drug Administration
- U.S. Secret Service
- Virginia Department of Forensic Science

Specialized laboratory facilities were required for the delivery of these classes. These included:
- A unique interactive SEM/EDS teaching laboratory in the ISU College of Engineering
- Temporary FTIR and Molecular Chemical Imaging laboratories in the USDOE Ames Laboratory
- Unique laboratory facilities with DART instrumentation available for instructional use, at the USDOE Ames Laboratory

Direct Analysis in real Time Mass Spectrometry (DART)

Announcement:	DART Mass Spectrometry for Forensic Analysis
Dates:	August 12-13, 2008
Location:	MFRC, USDOE Ames Laboratory, Ames, IA

Overview

The purpose of this workshop is to introduce the student to the multiple applications of direct analysis in real time (DART) mass spectrometry (MS) within forensic analysis. The student will receive a general introduction to DART MS, as well as instruction on its application in the fields of drug analysis, forensic toxicology, trace evidence analysis, and ink analysis. The workshop includes both lecture and laboratory sessions to illustrate the applications presented.

The general introduction will include mass calibration and derivation of elemental compositions from the observed spectra. The drug analysis instruction will include collision-induced dissociation (CID) MS and library searching to identify drugs. The toxicology module will cover both urine and blood screening techniques. The trace evidence session will include explosive residue on common items and tricks for identifying unknown materials. The ink analysis module will include dealing with interference from paper and the effects of age of the writing. The class will take place in an interactive media training room and a DART laboratory located in the USDOE Ames Laboratory.

Learning Outcomes

At the completion of this workshop, the participant will have knowledge on the following subjects:
- The general principles of DART MS
- Proper data processing, including mass calibration
- Determining elemental compositions from the spectra
- Preparation of diverse samples from the fields of toxicology, drug analysis, trace evidence, and questioned documents, and their presentation to the spectrometer for analysis
- Performing CID MS with the DART instrument
- Drug screening methods
- Use of mass spectral libraries to identify unknowns

Teaching Team

Workshop Leader:
- Roger Jones, PhD (jonesrw@ameslab.gov, 515-294-3894)

Workshop Instructors:
- Robert Cody (cody@jeol.com, 978-536-2396)
- Robert Steiner (robert.steiner@dfs.virginia.gov, 804-786-4707 ext. 22347)
- Peter Stout, PhD (pstout@rti.org, 919-316-3450)

Sponsors

This class is a collaboration among the Midwest Forensic Resource Center, the National Forensic Science Technology Center, and the NIJ-funded Forensic Technology Center of Excellence.

<u>Agenda</u>

Day 1

8:30 – 8:45	Welcome (Jones)
8:45 – 10:00	Introduction to DART MS – Lecture (Cody)
10:00 – 10:15	Break
10:15 – 11:30	Introduction to DART MS – Lab (Cody)
11:30 – 12:30	Lunch
12:30 – 2:15	DART MS for Forensic Drug Analysis – Lecture (Steiner)
2:15 – 2: 30	Break
2:30 – 4:30	DART MS for Forensic Drug Analysis – Lab (Steiner)

Day 2

8:30 – 9:30	DART MS for Forensic Toxicology Screening – Lecture (Stout)
9:30 – 9:45	Break
9:45 – 11:45	DART MS for Forensic Toxicology Screening – Lab (Stout)
11:45 – 12:45	Lunch
12:45 – 1:45	DART MS of Writing Inks – Lecture (Jones)
1:45 – 2:30	DART MS of Trace Evidence – Lecture (Cody)
2:30 – 2:45	Break
2:45 – 3:30	DART MS of Writing Inks – Lab (Jones)
3:30 – 4:15	DART MS of Trace Evidence – Lab (Cody)
4:15 – 4:45	Closing Remarks & Awarding of Certificates

Fourier Transform Infrared Spectroscopy (FTIR)

Announcement: Forensic FTIR Workshop
Dates: November 2-3, 2005
Location: USDOE Ames Laboratory, Ames, Iowa

Overview

This course will focus on the preparation and analysis of FTIR samples using FTIR transmission, reflectance, and microscopy accessories. It will include one day of classroom instruction and one day of hands-on sample preparation and analysis. The course will begin by briefly explaining how an FTIR works and the basic advantages of using an FTIR. It will cover the types of samples that can be run on an FTIR as well as common and accepted sampling practices. Users should be familiar with FTIR theory prior to taking this class.

After a brief introduction to FTIR theory and applications, there will be a detailed look at a wide variety of infrared sampling techniques. Special attention is paid to ATR, a technique increasingly popular in forensics labs for its speed and ease of use. Then attendees will prepare samples and analyze them using live FTIRs and microscopic techniques. Attendees will prepare solids, powders, drugs, liquids, semi-solids, pastes, gels, polymers, and fibers for IR analysis.

Instrumentation and accessories that will be used:
- Shimadzu FTIR-8400S
- Shimadzu IRPrestige
- Shimadzu AIM-8800 (Automated Infrared Microscope)
- Pike ☐Max (In sample compartment microscope)
- Diamond compression cell for use with microscopes
- SensIR Durascope
- Traditional sampling accessories (KBr pellets/press, salt plates, fixed pathlength liquid cells, gas cells)
- Reflectance sampling accessories (ATR, diffuse reflectance, specular reflectance)

Teaching Team
- Dr. Eric Bukowski, Shimadzu Scientific Instruments
- Dr. John Monti, Shimadzu Scientific Instruments
- Shannon Richard, Shimadzu Scientific Instruments

<u>Agenda</u>

Day 1

9:00 – 9:30	Introductions
9:30 – 10:30	Basics of FTIR (Lecture)
10:30 – 10:45	Break
10:45 – 11:15	FTIR Hardware and Routine Maintenance (Hands-on)
11:15 – 12:00	Hardware review (Lecture)
12:00 – 1:00	Lunch
1:00 – 1:30	Traditional sampling techniques (Lecture)
1:30 – 2:30	Traditional sampling accessories (Hands-on)
2:30 – 2:45	Break
2:45 – 3:30	Reflectance sampling techniques (Lecture)
3:30 – 4:30	Reflectance sampling accessories (Hands-on)
4:30 – 5:00	Q&A Review (Lecture and/or Hands-on)

Day 2

9:30 – 10:00	Spectral libraries (Lecture)
10:00 – 10:30	User constructed libraries (Hands-on)
10:30 – 10:45	Break
10:45 – 11:15	Forensic microscopy applications (Lecture)
11:15 – 12:00	Infrared Microscope Hardware (Hands-on)
12:00 – 1:00	Lunch
1:00 – 1:30	Preparing Samples (Lecture)
1:30 – 2:30	Attendee microscopy sample analysis (Hands-on)
2:30 – 2:45	Break
2:45 – 3:45	Attendee choice of activities
3:45 – 4:00	Break
4:00 – 4:30	Wrap-up

Molecular Chemical Imaging

Announcement:	Forensic Applications of Molecular Chemical Imaging
Dates:	November 13-14, 2007
Location:	USDOE Ames Laboratory, Ames, IA

Overview

Molecular chemical imaging combines digital imaging with conventional molecular spectroscopic techniques to provide molecular images and spectral data that detail sample material morphology, composition, and structure. Molecular chemical imaging technology allows an examiner to selectively detect, analyze, and identify chemical and biological samples, then picture the data on any dimension of interest, using both traditional image-processing techniques and sophisticated chemometric/spectral analysis techniques. The combined spatial and spectral information often reveals sample features that are not observable using traditional imaging techniques alone.

This 16-hour course will address the forensic application of widefield visible and near-infrared reflectance and absorbance chemical imaging. It will employ lecture, hands-on experience, and question-and-answer sessions to describe the use of chemical imaging by forensic scientists. The course is designed for forensic scientists interested in innovative analytical and software developments, trace evidence, forensic document examination, impression evidence, and drug chemistry.

Learning Outcomes

Upon completion of this course the student will have a better understanding of the molecular chemical imaging instrumentation, the software and analytical programs integrated into these instruments, their current use in forensic analyses, and their potential for greater use in forensic analysis.

Teaching Team
- James Jones, ChemImage Corporation
- Rebecca Schuler, ChemImage Corporation
- Joseph Stephens, U.S. Secret Service

<u>Agenda</u>

Day 1
Intro to Chemical Imaging (Schuler)
1-2 hours
- What is Chemical Imaging?
- What advantage does Chemical Imaging have over other methods?
- Different modes of Chemical Imaging and application areas

Forensics Applications of Chemical Imaging (Stephens, Schuler)
3-4 hours
- Experiences with chemical imaging systems
- Potential for greater use (document analysis, fingerprint imaging)

Intro to Software (Schuler, Jones)
2 hours
- Image Processing Functions
- Spectral Processing Functions
- Chemometric Techniques

Day 2
Laboratory Overview
7 hours
- Demonstration and Hands-on Exercises (Schuler)
- Forensic Applications and Chemical Imaging Systems (Stephens)
- Questions and answers regarding widefield visible and near-infrared reflectance/absorbance chemical imaging techniques and technology (Jones)

Summary and Closing

Scanning Electron Microscopy (SEM/EDS)

Announcement:	Introduction to SEM/EDS for Forensic Scientists
Location:	Scanning Electron Microscopy Laboratory, 3364 Hoover Hall, Department of Materials Science and Engineering College of Engineering, Iowa State University, Ames, Iowa
Dates:	April 26-29, 2005

Overview

This 4-day workshop will provide basic theory regarding SEM and Energy Dispersive X-ray analysis and hands-on laboratory exercises in Iowa State University's SEM teaching laboratory. Class topics will include SEM/EDS sample preparation, gunshot residue analysis via SEM/EDS, common trace analyses employing SEM/EDS, the investigation and identification of complex unknowns via SEM/EDS, the expansion and use of searchable databases and libraries, and the future of forensic SEM/EDS use. The class will close with an interactive panel discussion addressing real-time sample analyses and current issues in SEM/EDS use in crime laboratories. This workshop is a collaboration between the Midwest Forensics Resource Center and the Midwest Association of Forensic Scientists.

Teaching Team

Instructors

- Chris Bommarito, Michigan State Police
- Scott Chumbley, PhD, Iowa State University
- Thom Hopen, Bureau of Alcohol, Tobacco, Firearms and Explosives
- Frank Platek, U.S. Food and Drug Administration
- Mike Trimpe, Hamilton County Coroner's Office
- Dennis Ward, Federal Bureau of Investigation

MAFS Coordinator

- William Randle, Section Head, MAFS Trace Section, Missouri State Police Crime Laboratory

<u>Agenda</u>

Day 1

8:00 – 8:15	Introductions and Overview
8:15 – 9:30	Theory and Operation of SEM/EDS Instruments (Chumbley)
9:30 – 9:45	Break
9:45 – 11:15	Theory and Operation of SEM/EDS Instruments (Chumbley)
11:15 – 12:30	Lunch
12:30 – 2:00	Theory and Operation of SEM/EDS Instruments (Chumbley)
2:00 – 2:30	Break
2:30 – 4:00	Theory and Operation of SEM/EDS Instruments (Chumbley)

Day 2

8:00 – 9:30	Preparation for SEM/EDS Analyses (Platek, Ward)
9:30 – 9:45	Break
9:45 – 11:15	Preparation for SEM/EDS Analyses (Platel, Ward)
11:15 – 12:30	Lunch
12:30 – 2:00	SEM/EDS and Gun Shot Residue (Trimpe)
2:00 – 2:30	Break
2:30 – 4:00	SEM/EDS and Gun Shot Residue (Trimpe)

Day 3

8:00 – 9:30	SEM/EDS and Trace Analysis at a State Crime Lab (Bommarito)
9:30 – 9:45	Break
9:45 – 11:15	SEM/EDS and Trace Analysis at a State Crime Lab (Bommarito)
11:15 – 12:30	Lunch
12:30 – 2:00	Applications of SEM/EDS to the Investigation and Identification of Complex Unknowns in an FDA Laboratory (Platek)
2:00 – 2:30	Break
2:30 – 4:00	Applications of SEM/EDS to the Investigation and Identification of Complex Unknowns in an FDA Laboratory (Platek)

Day 4

8:00 – 9:30	Spectrum Library Identification and Classification Explorer (SLICE) (Ward)
9:30 – 9:45	Break
9:45 – 11:15	Spectrum Library Identification and Classification Explorer (SLICE) (Ward)
11:15 – 12:30	Lunch
12:30 – 2:00	Panel Discussion (All)
2:00 – 2:30	Break
2:30 – 4:00	Discussion (continued) and Closing

Bloodstain Interpretation and Crime Scene Reconstruction

The Bloodstain Interpretation and Crime Scene Reconstruction classes include:
- Advanced Bloodstain Pattern Interpretation
- Basic Bloodstain Pattern Interpretation
- Intermediate Crime Scene Reconstruction

These classes pair lectures with hands-on laboratory delivery methods, stressing practical hands-on exercises. The instructors were drawn from the community of forensic scientists and include:
- Bloodstain – Director of a state crime laboratory system and Section Head from a metro-regional crime laboratory
- Crime Scene – Retired municipal forensic scientist/homicide investigator and retired military investigator.

Specialized facilities were required for the delivery of the Bloodstain classes, and these were delivered in forensic crime laboratory/training facilities. The Crime Scene Reconstruction class was delivered in the USDOE Ames Laboratory.

Advanced Bloodstain Pattern Interpretation

Announcement: Advanced Bloodstain Pattern Interpretation Class
Dates: March 16-19, 2009
Location: Lawrence Police Department in Lawrence, KS

Overview

This 32-hour course is intended for experienced bloodstain pattern analysts. This refers to individuals who have already taken a basic 40-hour introductory class and have several years of experience interpreting bloodstain patterns as a criminal investigator, forensic scientist, or crime scene investigator. The course is highly interactive and built around complex bloodstain pattern analysis practical exercises. Progress in the class will be a function of student experience, preparation, and classroom effort.

The course takes a hands-on approach to interpretation of complex bloodstain patterns. More than half of the course consists of practical exercises during which students are required to process, document, and interpret complex bloodstain crime scenes. They will be required to recognize the bloodstain patterns that are present at the scenes and to reconstruct the events that led to bloodshed. Bloodstained clothing from victims and suspects, as well as weapons used in assaults, will be present in the scenes, shaping the students' interpretation of events. Students will be required to conduct presumptive blood testing, use proper controls, and explain false positives. They must also demonstrate how and when to use bloodstain enhancement reagents and explain the expected results. Students will be required to demonstrate proper bloodstain pattern documentation technique and document their findings with notes, diagrams, and photographs. They will be expected to prepare predicate questions for courtroom testimony and to participate in mock court demonstrations. Each student will also learn how to develop bloodstain pattern examination protocol(s) and institute quality assurance measures, following the best practices currently in the field.

Teaching Team
- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory system
- Kevin Winer, Trace Section Supervisor for the Kansas City Regional Crime Laboratory

<u>Agenda</u>

Day 1
- Introductions and class expectations
- Pretest
- NAS report and bloodstain pattern analysis
- SWGSTAIN
- Terminology
- Education and training guidelines
- Admissibility hearings
- Guidelines for developing SOP's
- Back to basics
- Practical Exercises #1 & 2-Pattern Recognition
- Math review
- Practical Exercise #3-Areas of Convergence and Origin
- Scientific method
- Practical Exercise #4-Complex Patterns
- Report writing

Day 2
- Blood drying and clotting times of blood
- Practical Exercise #5-Drying and Clotting Times
- Documentation
- New terminology
- Practical Exercise #6-Documenting Crime Scenes
- Crime scene
- Notes, documentation, photographs

Day 3
- Tabulate drying and clotting time data
- Recap Practical Exercise #5
- Tabulate teams' data
- Interpret and discuss results
- Examination of bloodstained clothing
- Case studies
- Practical Exercise #7 - Impact versus Contact
- Practical Exercise #8 – Back Spatter versus Contact
- Practical Exercise #9 – Examination of Clothing

Day 4
- Report Findings of Practical Exercises (5-6-7-8-9)
- Working from photographs
- Lecture
- Practical Exercises #10 and #11
- Designing bloodstain experiments
- Practical Exercise #12
- Final test
- Closing and certificates

Basic Bloodstain Pattern Interpretation

Announcement:	Basic Bloodstain Pattern Interpretation Class
Dates:	February 9-13, 2009
Location:	Kansas City (MO) Police Department Training Academy

Overview

This 40-hour course takes a hands-on approach to understanding bloodstain patterns. Approximately half of the course consists of experiments and practical exercises. The course is designed for criminal investigators, forensic scientists, and those in crime scene investigation or reconstruction. It provides basic knowledge of bloodstain pattern analysis and the fundamentals of bloodstain pattern interpretation.

Lab Manual: *Experiments and Practical Exercises in Bloodstain Pattern Analysis* by Terry L. Laber and Barton P. Epstein.

Lecture Material: Notebook provided by the instructor outlining the history of bloodstain pattern analysis, physical properties of blood, mathematics in bloodstain pattern interpretation, bloodstain pattern recognition, documentation, and report writing.

Class Schedule: Each day will begin with a lecture and close with experiments or exercises. The lectures provide information, describe specific bloodstain patterns, preview coming experiments, and review past experiments or exercises. The experiments and exercises are designed to assist the student in identifying blood stain patterns that would typically be encountered at a crime scene.

Learning Outcomes

Upon completion, a student will have a better understanding of the physical properties of blood and the ways in which those properties influence bloodstain patterns. The student will be able to identify and document bloodstain patterns found at crime scenes, determine the position of a victim and/or assailant at the time of bloodshed, determine the movements of persons and/or objects during bloodshed, and in some cases identify the type of weapon used.

Teaching Team

- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory system
- Kevin Winer, Trace Section Supervisor for the Kansas City Regional Crime Laboratory

<u>Agenda</u>

Day 1

8:00 – 12:00	Lecture: Introduction to Bloodstain Pattern Interpretation

- Historical background and scientific leaders
- Physical properties of blood and influence on patterns
- Basic pattern recognition
- Mathematics used in impact bloodstain patterns

1:00– 5:00	Laboratory Exercises: From lab manual

- Experiment #1: Diameter of Stain as Function of Origin
- Experiment #2: Diameter of Stain vs. Distance Fallen and Diameter of Stain vs. Volume of Drop
- Experiment #3: Target Surface Effects
- Experiment #4: Impact Angle vs. Stain Shape
- Practical Exercise #3: Source of Origin Determinations

Day 2

8:00 – 12:00	Lecture: Bloodstain Pattern Recognition and Case Studies

- Review material from Day 1 lab experiments
- Experiments on patterns: cast-off bloodstain, impact, gunshot bloodstain, and contact/transfer
- Quiz # 1: Quiz on angle determination and mathematics

1:00 – 5:00	Laboratory Exercises: From lab manual

- Experiment #5: Cast-off Bloodstain Patterns
- Experiment #6: Impact Patterns
- Experiment #7: Gunshot Spatter Patterns
- Experiment #10: Contact/Transfer Patterns

Day 3

8:00 – 12:00	Lecture: Bloodstain Pattern Recognition and Case Studies

- Review material from Day 2 lab experiments
- Experiments on large volumes of falling blood, projected bloodstain patterns, blood in motion, flow patterns, contact bloodstain patterns from shoes and distance traveled

1:00 – 5:00	Laboratory Exercises: From lab manual

- Experiment #8: Large Volumes of Falling Blood
- Experiment #9: Projected Blood
- Experiment #12: Stain Size vs. Distance Traveled
- Experiment #13: Blood in Horizontal Motion
- Experiment #14: Bloody Shoe Trail

Day 4
8:00 – 12:00   Lecture: Documenting Bloodstain Pattern Evidence
- Review of Day 3 experiments
- Case studies
- Start Experiment #11: Drying and clotting time of blood
- Quiz #2: Bloodstain pattern vocabulary

1:00 – 5:00   Laboratory Experiments: From lab manual
- Experiment #11: Drying Time of Blood
- Practical Exercise #1: Bloodstain Pattern Recognition
- Practical Exercise #2: Examination of Bloodstained Clothing

Day 5
8:00 - 5:00   Lecture: Developing an Expertise in Bloodstain Pattern Interpretation and Testifying in Court
- Review of Day 4 practical exercises
- Case studies

Laboratory Experiments: From lab manual
- Practical Exercise #4: Crime Scene Processing

Closing
- Final Written Examination
- Critique

Intermediate Crime Scene Reconstruction

Announcement:	Intermediate Crime Scene Reconstruction Class
Dates:	February 6-9, 2007
Location:	USDOE Ames Laboratory, Ames, IA

Overview

This course is designed for investigators, crime scene technicians, forensic scientists, and others practicing crime scene reconstruction and analysis. It will enhance participants' basic crime scene reconstruction skills and develop the advanced skills needed to analyze complex crime scenes. Students will practice crime scene reconstruction analysis techniques, interpret their findings, and present their findings in mock court. The course will develop a fundamental knowledge of crime scene reconstruction hypothesis development and testing. It will also provide students with an objective method for defining, organizing, and communicating the events associated with a complex crime (event analysis). This is not intended to create an "instant" crime scene reconstruction expert, and is not a crime scene processing class.

Learning Outcomes

Upon completion of the course, the student should:

- Identify the steps of scientific method and apply them to crime scene reconstruction
- Demonstrate the ability to develop a written hypothesis and use it to set an objective foundation for any ultimate conclusion
- Identify the seven steps of the methodology used in crime scene analysis
- Demonstrate the ability to flow chart an incident, distinguishing relative chronology from absolute chronology
- Demonstrate the use of Event Analysis technique(s) to define and organize objective information about a criminal incident
- Demonstrate an ability to evaluate a complex crime scene (on the basis of event analysis techniques)
- Understand and demonstrate an ability to articulate their crime scene reconstruction and analysis to a jury

Teaching Team

- Captain Tom Bevel, Oklahoma City Police Department (Retired), Associate Professor, Forensic Science program, University of Central Oklahoma in Edmond, Oklahoma
- Special Agent Ross M. Gardner, U.S. Army Criminal Investigation Command (Retired)

<u>Agenda</u>

Day 1

8:00 – 8:30	Registration and Introduction
8:30 – 9:00	Pretest
9:00 – 10:00	Introduction to Crime Scene Analysis
10:00 – 10:15	Break
10:15 – 12:00	Applying Scientific Method.
12:00 – 1:00	Lunch
1:00 – 2:30	Seven-step Event Analysis
2:30 – 2:45	Break
2:45 – 4:45	Practical Exercise: Event Segment Worksheet
	Homework: Read Chapters 2, 10

Day 2

8:00 – 9:30	Scientific Template Practical Exercise
9:30 – 10:00	Direct/Circumstantial Practical Exercise
10:00 – 10:15	Break
10:15 – 12:00	Flow Charting
12:00 – 1:00	Lunch
1:00 – 2:15	Case Practical Exercise
2:15 – 2:30	Break
2:30 – 3:00	Using Worksheets (continued)
3:00 – 4:30	Report Writing and Demonstrative Evidence

Day 3

8:00 – 10:15	Group Case Practical
10:15 – 10:30	Break
10:30 – 12:00	Group Case (continued)
12:00 – 1:00	Lunch
1:00 – 2:00	Group Case (continued)
2:00 – 2:15	Break
2:15 – 4:30	Using Worksheets to identify and organize information

Day 4

8:00 – 9:00	Group Case Practical (continued)
9:00 – 10:15	Complete Event Flow Chart and Worksheets
10:15 – 10:30	Break
10:30- 12:00	Complete Group Case Practical Exercise Analyses
12:00 – 1:00	Lunch
1:00 – 2:30	Group Case Exercise Presentations
2:30 – 2:45	Break
2:45 – 3:15	Conclude presentations, class summary, distribute certificates

Digital Evidence

The Digital Evidence classes include:
- Digital Evidence for Crime Laboratory and Law Enforcement Managers
- Forensic Digital Imaging Techniques

The external partner participating in the management class was the National Center for Forensic Science.

Instructors were drawn from the community of forensic scientists, and included recognized subject matter experts from:
- National Center for Forensic Science
- Federal Bureau of Investigation
- MoreHits/Foray Technologies

Digital Evidence for Crime Laboratory and Law Enforcement Managers

Announcement: Management Perspective on Digital Evidence
Dates: December 16-17, 2003
Location: USDOE Ames Laboratory, Ames, IA

<u>Overview</u>
This class will describe how to establish a forensic digital evidence analysis capability in a crime laboratory or law enforcement organization. It will also describe the historical, legal, technological, law enforcement, and forensic background(s) that will influence the organizational decisions a crime laboratory or law enforcement manager must make. The class will close with discussions on how to organize, staff, finance, and budget a digital evidence laboratory.

<u>Teaching Team</u>
- Carrie M. Whitcomb, MSFS, Director, National Center for Forensic Science
- Mark M. Pollitt, MS, FBI (Retired)

Day 1

8:10 – 9:00	Welcome, Introductions, and Assessment (MFRC, Whitcomb, Pollitt)
9:00 – 9:45	The History of Digital Evidence (Whitcomb)
9:45 – 10:00	Break
10:00 – 11:20	Legal Issues (Pollitt)
11:20 – 12:00	Roles and Responsibilities (Pollitt)
12:00 – 12:50	Lunch
1:00 – 2:45	Case Study (Pollitt & Whitcomb)
2:45 – 3:00	Break
3:00 – 4:00	Case Study (continued) (Pollitt & Whitcomb)

Day 2

8:10 – 9:00	Standards and Quality Assurance (Whitcomb)
9:00 – 9:45	Training and Educational Requirements (Whitcomb)
9:45 – 10:00	Break
10:00 – 11:00	Accreditation (Whitcomb)
11:00 – 12:00	Certifications (Whitcomb)
12:00 – 12:50	Lunch
12:50 – 1:30	Organizational Issues (Pollitt)
1:30 – 2:00	Personnel (Pollitt)
2:00 – 2:45	Digital Evidence Facilities (Whitcomb)
2:45 – 3:00	Break
3:00 – 3:50	Budget and Finance (Pollitt)
3:50 – 4:30	Closing Remarks and Assessment (Pollitt & Whitcomb)

Forensic Digital Imaging Techniques

Announcement:	Intermediate Forensic Digital Imaging Techniques Course
Dates:	March 12-16, 2007
Location:	Iowa State University, Ames, IA

Overview

This course will build on the student's existing foundation of digital imaging concepts and is designed for those already experienced with forensic digital image analyses. Classroom examples will be drawn from the fields of fingerprints and palm prints. Attendees will learn to apply such digital imaging procedures as working with multiple layers; changing image formats; creating line-ups and contact sheets; using multiple "snapshots" for comparison purpose during the image enhancement process; and preparing images for internet, intranet, and other external communications. The course requires many practical application exercises, and attendees are expected to bring fingerprint and/or palm print images for classroom analysis. The class will utilize Adobe PhotoShop and MORE HITS Forensic Imaging software.

This is a five-day, intensive hands-on training program. Each day will begin with a review of the topics covered during previous day of training. There will also be a daily review covering the topics discussed during that day. Each student will be required to successfully complete a series of topical and summary exercises throughout the course of the training program. On the last day, there will be a final review and students will be expected to complete hands-on exercises covering all of the topics included in the course.

Pre-requisites: Progress in the course is influenced by the student's degree of preparation, so adherence to the prerequisites is necessary. Individuals taking this course must have either direct knowledge of or expertise in at least one area of forensic sciences or crime scene investigation that can directly benefit from the use of a digital imaging solution. All of the teaching examples in this class will be taken from the disciplines of fingerprints and palm-prints.

Applicants must be able to answer "yes" to the following five questions in order to qualify:
1. Are you familiar with color channels and layers?
2. Are you familiar with the guidelines for feathering in PhotoShop?
3. Do you use the dodge and burn tools?
4. Do you use levels and curves?
5. Do you know how to calibrate an image for 1:1 life size for output?

Learning Objectives

After completing this course of instruction, the class participants will be able to:
- Describe the impact of resolution on image size
- Perform advanced image processing techniques using multiple layers, creating line-ups, contact sheets, etc.
- Demonstrate the five basic principles of digital image processing
- Demonstrate and successfully use snapshots to compare image enhancement techniques, to create new documents, and more
- Define characteristics for consideration in difficult image enhancement processes
- Demonstrate how to change image formats and prepare images for both Internet and intranet communications

Teaching Team
- David Witzke, Foray Technologies

<u>Agenda</u>

Day1: Digital Imaging Concepts
- The world of digital imaging (review)
- Image size, resolution, and modes
- File size, dimensions, and resolution
- Changing pixel dimensions
- Changing an image's print size
- Color modes
- Color channels
- Image enhancement techniques
- Limitations of the printing process
- Steps to create better color and tonality
- Using the dodge and burn tool
- Variations using the brightness/contrast command

Day 2: Advanced Digital Imaging Concepts
- Understanding color concepts
- Digital imaging software overview
- Changing digital image file formats
- Understanding more about resolution
- Advanced scanner issues
- Camera resolutions and specifications
- Standardizing policies and procedures
- Capturing video
- Image enhancement techniques
- Changing color levels
- Changing hue and saturation
- Outputting to the web, video, and CD-ROMs

Day 3: Video Imaging Concepts
- Fundamentals of video image processing
- Exporting still frame images
- Separating fields (de-interlacing)
- Resolution and fields
- Image size and resolution
- File size and resolution
- Enhancing contrast
- Optimizing images for printing

Day 4: Getting ready for court
- Preparing evidence for court
- How best to provide expert testimony
- Developing digital evidence policies and procedures

Day 5: Final Review and Exam
- Course review
- Final exam
- Course evaluations and certificates

Forensic Quality Assurance and Management

The Forensic Quality Assurance and Management classes include:
- Estimating Measurement Uncertainty in Forensic Laboratories
- Implementing Process Change in Crime Laboratories
- Introduction to Business Process Mapping for Forensic Quality Assurance Managers

The classes were highly interactive in nature. The output of the Measurement Uncertainty class was a draft plan for managing measurement uncertainty in crime laboratories. Partners or co-sponsors in these include:
- Association of Forensic Quality Assurance Managers (AFQAM)
- Environmental Protection Agency's Office of Criminal Enforcement, Forensics and Training, National Enforcement Investigations Center

The delivery of these classes occurred both at the AFQAM conference in Virginia Beach, Virginia, and in Ames, Iowa.

Estimating Measurement Uncertainty in Forensic Laboratories

Announcement:	Designing and Implementing a Program for Estimating Measurement Uncertainty in Forensic Laboratories
Dates:	November 4-5, 2008
Location:	Ames, IA

Overview

This class is intended for those who must manage or implement crime laboratory programs that track measurement uncertainty for scientific purposes, or prepare for laboratory accreditation. It will provide participants with a practical introduction to the scientific issue, guidance on its expression in ISO/IEC 17025:2005, and model uncertainty of measurements policies and statements.

The topics to be covered include requirements for estimating and reporting measurement uncertainty, fundamental definitions and concepts, obtaining case-specific uncertainty associated with reported results, obtaining case-independent uncertainty associated with laboratory processes, measurement uncertainty statements in laboratory reports, developing a measurement uncertainty operating procedure, and developing data quality summaries. Participants will draft a measurement uncertainty outline appropriate to their laboratory, and draft statements appropriate to document individual cases.

Teaching Team
- Dr. Beth Mishalanie, EPA Office of Criminal Enforcement, Forensics, and Training, National Enforcement Investigations Center (NEIC)

Day 1
Course Objectives and Content
- Explain a model operating procedure for estimating measurement uncertainty
- Explain a model data quality summary
- Provide participants with an outline of a model operating procedure, and an outline of a data quality summary report.

Requirements for Estimating and Reporting Measurement Uncertainty [ISO/IEC 17025:2005(E)]
- Measurement uncertainty definition
- Estimating measurement uncertainty [ISO/IEC 17025:2005(E) Section 5.4.6]
- Reporting measurement uncertainty [ISO/IEC 17025:2005(E) Section 5.10.3.1(c)]

Foundational Definitions and Concepts
- Qualitative versus quantitative results
- The meaning of accuracy, bias (trueness), and precision as applied to quantitative results
- Type A and Type B evaluations of uncertainty
- The meaning of "top down, bottom up" evaluations of measurement uncertainty
- Group discussion: extrapolating to crime laboratory disciplines and casework

Obtaining Case-Specific Estimates: Measurement Uncertainty Associated with Reported Results
- Preparation of data quality summaries in case files
- Data review and the data package review/approval processes
- The role of the laboratory or unit QA manager

Obtaining Case-Independent Estimates: Evaluating Sources of Measurement Uncertainty from Common Laboratory Measurement Processes
- Categorizing, evaluating, and characterizing sources of measurement uncertainty
- Where to obtain data and information
- Discussion: examples of data and information that laboratories have which can be used for evaluating the sources of measurement uncertainty

Measurement Uncertainty Statements (used in laboratory reports)
- Options for reporting quantitative results; examples
- Establishing rounding rules for use in interim data/summary statistics and in reporting final results
- Reporting inconclusive results

Day 2
Exercise 1: Developing a Measurement Uncertainty Operating Procedure Outline
- Draft an operating procedure outline using template and example
- Present group outline to class, engage in discussion
- Outcome: participants develop draft operating procedure outlines for further use

Exercise 2: Developing Data Quality Summary Outlines
- Split into groups (drugs, toxicology, etc.)
- Extrapolate a data quality summary
- Present approaches and justifications to class, engage in discussion
- Outcome: participants develop draft data quality summaries

Implementing Process Change in Crime Laboratories

Announcement: Implementing Process Change in Crime Laboratories
Dates: October 14-15, 2008
Location: Ames, IA

Overview

This class describes what to do after one has performed a process mapping analysis. The class is intended for laboratory managers and administrators, quality managers, and others with laboratory operation responsibilities. Day 1 will provide an overview of the process management cycle, an exercise mapping a lab process, discussion of the most common process mapping tools, and instruction on how to collect and assess process-performance data. Day 2 will address the analysis of process mapping data, the identification of process improvement opportunities, planning, testing, and implementing a selected process improvement, and methods for tracking process change results.

This class builds upon the trainees' and participating laboratories' experiences, puts process mapping in a broader crime laboratory management context, and describes the next steps required to use process mapping data to implement real process change in a forensic laboratory.

Teaching Team
- Joe Brancaccio, Brazos Group

<u>Agenda</u>
Day 1

8:30 – 9:15	Seven-step process management cycle
9:15 – 10:15	Systems thinking/systems mapping
10:15 – 10:45	Break
10:45 – 11:45	Exercise: Develop a systems map for a pre-selected lab process
11:45 – 1:00	Lunch
1:00 – 2:00	Selected mapping tools
2:00 – 3:00	Exercise: Training exercise to develop a top-down and cross-functional process map.
3:00 – 3:30	Break
3:30 – 4:00	Identifying, collecting and utilizing process data for analysis
4:00 – 5:30	Process measurement tools & techniques

Day 2

8:30 – 9:00	Defining the difference between process improvement and process re-engineering
9:00 – 10:30	Process map analysis
10:30 – 11:00	Break
11:00 – 11:30	Identifying/selecting process improvement opportunities
11:30 – 12:00	Team project assignments
12:00 – 1:00	Lunch
1:00 – 1:30	Identifying Improvement Teams
1:30 – 3:30	Facilitation/Coaching techniques
2:15 – 2:45	Break
3:30 – 4:00	Measuring and tracking process and quality results
4:00 – 4:30	Next steps: where do you go from here?

Introduction to Business Process Mapping for Forensic Quality Assurance Managers

Announcement:	Introduction to Business Process Mapping for Crime Laboratory Quality Assurance Managers
Dates:	October 7-8, 2008
Location:	Virginia Beach, VA

Overview

This specially-tailored two-day interactive workshop is designed to introduce key process management concepts and skills to AFQAM members. It will address systems analysis, business process documentation and management, and the statistical tools needed to document and manage laboratory systems.

The class begins with the concepts of 'systems thinking' and "systems mapping." These can help identify gaps between inputs and outputs, or bottlenecks restricting throughputs, which may hinder laboratory processes. Several Business Process Mapping tools will be taught; top-down charts, cross-functional maps and cycle time charts. These document and analyze a work process, and can identify opportunities for problem resolution and/or process improvement. Several statistical tools and techniques such as Pareto charts, histograms, trend charts, and scatter diagrams are also covered. These assist managers monitor process performance, provide baselines for process analyses, and help evaluate initiatives.

A seven-step process management cycle is also covered. This will assist participants to conceptualize the role of business-process-mapping within the overall task of process management. Process mapping provides a critical step in the continuous sequence of root cause analyses and solution implementations, but requires the support of the other elements in the management cycle if it is to yield productive results.

This workshop will demonstrate the importance of process and result measurements, and will suggest how QA managers may utilize process measurements to improve process performance and prevent poor quality results. This class builds upon the trainees' and participating laboratories' experiences, puts process mapping in a broader crime laboratory management context, and describes the next steps required to use process mapping data to implement real process change in publicly funded crime laboratories.

Teaching Team
- Joe Brancaccio, Brazos Group

Agenda

Day 1
Introduction to Systems Thinking and Mapping
- Systems Thinking
- Systems Mapping
- Exercises and Discussion

Introduction to Business Process Mapping (Examples, Tools and Procedures)
- Process Mapping Tools
  - Top Down Chart
  - Block Logic Diagrams
  - Responsibility Charts
  - Cycle Time Charts
  - Cross-Functional Maps
  - Exercises and Discussion
- Process Management Cycle
  - Gap Analysis
  - Root Cause Identification
  - Solution Identification & Implementation
  - Exercises and Discussion

Day 2
Tools for Monitoring, Analyzing, and Controlling Lab Processes
- Process Analysis Tools
  - Check-sheets
  - Pareto Charts
  - Histograms
  - Trend Charts
  - Scatter Diagrams
  - Exercises and Discussion
- Process Implementation and Measurements
  - Measurement Techniques
  - Process Management
  - Exercises and Discussion
- Next Steps in Crime Laboratory Process Mapping

Forensic Symposia

The Forensic Symposia include:
- Bloodstain Pattern Analysis
- DNA
- Drug Chemistry
- Toxicology

The MFRC Symposia are highly interactive in nature. Their agendas give group discussion equal time with subject matter expert's presentations, and facilitators are used to stimulate and/or moderate group discussion. The need for a professional development venue which allows for deeper discussion of emerging issues, and for analysis of new knowledge generated in experience, was first expressed to the MFRC by the Midwest Association of Forensic Scientists. The "Gordon Research Conferences" provided the initial model for the MFRC's Symposia. Subsequent experience has refined the MFRC/MAFS forensic symposium model.

Evaluations and follow-up surveys suggest that the Symposia are considered productive by the participants, and have effects that stretch forward in time beyond the event itself. Structurally, they appear to fill a gap between more formal conference and less structured roundtable professional development formats.

Bloodstain Pattern Analysis Symposium

Announcement:	Forensic Bloodstain Pattern Analysis Symposium
Dates:	February 5-7, 2008
Location:	Iowa State University, Ames, IA

Overview

This two and-a-half day Symposium will provide a means for sharing new advances and recognized best practices in Bloodstain Pattern Analysis. It is intended for both established professionals and newer analysts. Ten experts from the United States and Canada will lead Symposium discussions. These discussions are expected to result in the exchange of new knowledge, suggestions for improved practice and/or recommendations for change. The Symposium will also provide an opportunity to build or reinforce resource relationships among the participants.

Teaching Team

Subject matter expert coordinator:

- Mike Van Stratton, Director, Kansas Bureau of Investigation Crime Laboratory system

Facilitators:

- Jeff Gurvis, Independent Bloodstain Pattern Analyst
- Kevin Winer, Trace Section Supervisor, Kansas City Police Department Crime Laboratory

<u>Agenda</u>

Day 1

8:00 – 8:30	Introductions/Goal(s) of Symposium (Winer, Gurvis)
8:30 – 9:15	A Model Bloodstain Quality Assurance Program Chris Bommarito, Michigan State Police
9:15 – 10:15	Discussion
10:15 – 10:30	Break
10:30 – 11:15	The Canadian Model of Mentoring a Bloodstain Analyst Pat Laturnus, RCMP (Retired)
11:15 – 12:15	Discussion
12:15 – 1:15	Lunch
1:15 – 2:00	Documentation of Bloodstain Pattern Evidence Toby Wolson, Miami-Dade Police Crime Laboratory
2:00 – 3:00	Discussion
3:00 – 3:15	Break
3:15 – 4:00	Examination of Bloodstained Clothing Terry Laber, Minnesota Bureau of Criminal Apprehension
4:15 – 5:15	Discussion

Day 2

8:15 – 9:00	Complex Bloodstain Patterns Pat Laturnus, RCMP (Retired)
9:00 – 10:00	Discussion
10:00 – 10:15	Break
10:15 - 11:00	Computer Generated Analysis of Impact Bloodstain Patterns Mike Illes, Ontario Provincial Police
11:00 – 12:00	Discussion
12:00 – 1:00	Lunch
1:00 – 1:45	Writing a Bloodstain Report Paul Kish, Independent Forensic Consultant

1:45 – 2:45	Discussion
2:45- 5:00	Casework roundtable and "Ask the Expert" Q and A
6:30 – 7:15	Scientific Working Group on Bloodstain Pattern Analysis, Tony Onorato, FBI
7:15 – 8:15	Discussion and continuation of casework roundtable

Day 3

8:15 – 9:00	Admissibility of Bloodstain Pattern Analysis in Courts Rhonda Craig, FBI
9:00 – 10:00	Discussion
10:00 – 10:15	Break
10:15 - 11:00	Ethics in Bloodstain Pattern Analysis Carolyn Gannett, San Diego Sheriff's Dept.
11:00 – 12:00	Discussion
12:00 – 1:00	Lunch
1:00 – 1:45	Project on Animated Bloodstain Pattern Analysis Teaching Aids, Kevin Winer, Kansas City Police Department
1:45 – 2:45	Discussion
2:45- 3:15	Break, Distribute Certificates, and Close

DNA Symposium

Announcement:	Symposium on Special Topics in Forensic DNA Analysis
Dates:	June 9-11, 2009
Location:	Ames, IA

Overview

This Symposium is intended for both established professionals and newer analysts. Its overall goal is to stimulate advances in practice among the participants and advances communicated through the experience-based discussion of the participants. A secondary goal of the Symposium is to provide the participants with a collaborative learning environment in which they may reinforce or build professional resource relationships.

Ten experienced analysts will present talks and lead group discussions of current issues in forensic DNA analysis at the Symposium. Topics will include Use of RNA for Stain Identification, Emerging Developments in DNA Analytical Technology, Improving DNA Laboratory Efficiency, Casework Errors and Error Rates, Mixtures, Low Copy Number Issues, Familial Searching, CODIS Issues, Courtroom Testimony, and the Innocence Project's Case Approach. This Symposium is delivered in collaboration with the Midwest Association of Forensic Scientists.

Teaching Team

Speaker/coordinator:

- Danielle Hankinson, MAFS DNA Section Coordinator, Michigan State Police Crime Laboratory DNA Analyst

Facilitator:

- Brian Hoey, Missouri State Highway Patrol DNA Section Head, former MAFS DNA Section Coordinator

<u>Agenda</u>

Day 1
8:00 – 8:30   Introductions/Goals of Symposium
Brian Hoey (Missouri State Highway Patrol Crime Laboratory)

8:30 – 9:15   Using RNA for Stain Identification
Doug Saul (DuPage County Sheriff's Crime Lab)

9:15 – 10:00   Discussion

10:00 – 10:30 Break

10:30 – 11:15 Developments in DNA Technology
Thomas Wahl (Forensic DNA Facility, NDSU)

11:15 – 12:00 Discussion

12:00 – 1:00   Lunch

1:00 – 1:45   Improving Laboratory Efficiency
Sarah Johnston (Ontario Centre of Forensic Sciences)

1:45 – 2:30   Discussion

2:30 – 3:00   Break

3:00 – 3:45   Casework Errors and Error Rates
Mike Schmit (Iowa Division of Criminal Investigation Criminalistics Laboratory)

3:45 – 4:30   Discussion

4:30 - 5:00   Open Forum

5:30 – 7:00   Reception

Day 2
8:30 – 9:15   Mixtures
Ann Gross (Minnesota BCA Laboratory)

9:15 – 10:00   Discussion

10:00 – 10:30 Break

10:30 – 11:15 LCN Issues
Kerry Opel PhD (Upper Iowa University)

11:15 – 12:00 Discussion

12:00 – 1:00   Lunch

1:00 – 1:45   Familial Searching
                 Rockne Harmon (Senior Deputy District Attorney for Alameda County CA,
                 Retired)

1:45 – 2:30   Discussion

2:30 – 3:00   Break

3:00 – 3:45   CODIS Issues
                 Tim Zolandz(Federal Bureau of Investigation)

3:45 – 4:30   Discussion

4:30 – 5:00   Open Forum

Day 3
8:30 – 9:15   Innocence Project-Case Approach
                 Keith Findley JD (University of Wisconsin Law School)

9:15 – 10:00   Discussion

10:00 – 10:30   Break

10:30 – 11:15   Courtroom Testimony
                 Jason Wyckoff (Missouri State Highway Patrol Crime Lab)

11:15 – 12:00   Discussion

12:00 – End   Certificates, Evaluations, Close

Drug Chemistry Symposium
Announcement: Symposium on Advanced Issues in Forensic Drug Chemistry
Dates: May 8-10, 2007
Location: Iowa State University, Ames, IA

Overview
This Symposium is intended to provide a means for sharing advances in Forensic Drug Chemistry among established examiners and the new generation of analysts. It will provide participants with a collaborative, exploratory, and deliberative forum. Expert discussion leaders will present current issues to their peers, with the intention of stimulating discussion that will advance knowledge, result in practical action, or lead to recommendations for change. This Symposium is delivered in collaboration with the Midwest Association of Forensic Scientists.

Teaching Team
MAFS organizer:
- Jeremy Morris, Johnson County (KS) Crime Laboratory

Discussion facilitator:
- Sandy Koresh, Wisconsin State Crime Laboratory-Milwaukee

<u>Agenda</u>

Day 1

8:00 – 8:30	Introductions
8:30 – 9:00	Preparing for ISO Accreditation in Drugs Joe Bono (Director, Secret Service Lab)
9:00 – 10:00	Discussion
10:00 – 10:30	Break
10:30 – 11:00	Clan Lab Trends Brooke Ehlers (Miami Valley Crime Laboratory, Ohio)
11:00 – 12:00	Discussion
12:00 – 1:00	Lunch
1:00 – 1:30	MDMA Synthesis and Trends Terry Dal Cason (DEA Laboratory, Chicago)
1:30 – 2:30	Discussion
2:30 – 3:00	Break
3:00 – 3:30	"Oh Don't Give Me that Sample:" Complex Compounds, Mixtures, and Matrices Claire Donaghey (DuPage County Crime Lab)
3:30 – 5:00	Discussion
6:00 – 7:00	Reception

Day 2

8:30 – 9:00	Clan Lab Case Review Tim McKibben (Colorado Bureau of Investigation)
9:00 – 10:00	Discussion
10:00 – 10:30	Reducing Backlogs/Turn-around Time Sue Gross (Minnesota BCA Lab)
10:30 – 11:00	Discussion
11:00 – 11:30	SWGDRUG Update Rick Paulas (Illinois State Police Crime Lab)
11:30 – 12:00	Discussion

12:00 – 1:00	Lunch
1:00 – 1:30	Statistical Sampling Plans Chris Krug (Johnson County (KS) Crime Laboratory)
1:30 – 2:30	Discussion
2:30 – 3:00	Break/travel to informal discussion site
3:00 – 5:30	Informal discussions (Reiman Gardens)
5:30 – 6:30	Dinner (Reiman Gardens)
6:30 – 9:30	Participant Case Study Discussions (Hotel)

Day 3

8:30 – 9:00	Recent Fentanyl Powder Cases James DeFrancesco, PhD (DEA Laboratory, Chicago)
9:00 – 10:00	Discussion
10:00 – 10:30	Break
10:30 – 11:00	Quantitation Methods Adam Benne/Shawn Brooks (MSHP Crime Laboratories)
11:00 – 12:00	Discussion, Certificates

Toxicology Symposium

Announcement:	Symposium on Special Topics in Forensic Toxicology
Dates:	August 19-21, 2008
Location:	Ames, IA

Overview

This Symposium is intended for those who are newer within the discipline, as well as for those with mid-to-long term experience. Four nationally recognized experts will lead discussions that address the analytical instruments and methods employed in forensic toxicology, their application to challenging analytes and matrices, and the impact of pharmacokinetics and pharmacodymanics on the interpretation of toxicological analyses.

Teaching Team

Subject matter expert coordinator:

- Dr. Timothy Rohrig, Director, Sedgwick County [Kansas] Regional Forensic Science Center; Director, Sedgwick County Forensic Science Laboratories; Chief Toxicologist, Sedgwick County [Kansas] Regional Forensic Science Center; Clinical Assistant Professor of Pathology, University of Kansas School of Medicine-Wichita; Adjunct Professor of Criminal Justice and Forensic Science, Wichita State University

Subject matter experts:

- Rod McCutcheon, Chief Toxicologist, Bexar County Medical Examiner's Office, Texas
- Dan Anderson Toxicologist, Los Angeles County Coroner's Office
- Christine Moore, Vice President, Toxicology Research and Development, Immunalysis Corporation

<u>Agenda</u>

Day 1	*Topic: Analytical Techniques*

8:00 – 8:30   Introduction/Goals of Symposium
                    Todd Zdorkowski (MFRC)

8:30 – 10:15   Intro to Analytical Techniques/Colorimetric Tests and Discussion
                    Tim Rohrig (Sedgwick County Regional Forensic Science Center)

10:15 – 10:30   Break

10:30 – 12:15   Immunological Assays and Discussion
                    Rod McCutcheon (Bexar County Medical Examiner's Office)

12:15 – 1:15   Lunch

1:15 – 3:00   Gas Chromatography/Mass Spectrometry and Discussion
                    Dan Anderson (Toxicologist, Los Angeles County Coroner's Office)

3:00 – 3:15   Break

3:15 – 5:00   Liquid Chromatography/Mass Spectrometry and Discussion
                    Rod McCutcheon (Bexar County Medical Examiner's Office)

Day 2   *Topic: Challenging Analytes, Matrixes and Interpretive Issues*

8:30 – 10:15   New Antidepressants/Antipsychotics and Discussion
                    Dan Anderson (Toxicologist, Los Angeles County Coroner's Office)

10:15 – 10:30   Break

10:30 – 12:15   Oral Fluid Analysis and Discussion
                    Rod McCutcheon (Bexar County Medical Examiner's Office)

12:15 – 1:15   Lunch

1:15 – 3:00   Hair Analysis and Discussion
                    Rod McCutcheon (Bexar County Medical Examiner's Office)

3:00 – 3:15   Break

3:15 – 5:00   Decomposed and Embalmed Bodies and Discussion
                    Tim Rohrig(Sedgwick County Regional Forensic Science Center)

5:00 – 7:45   Off-Site Informal Discussion

Day 3   *Topic: Impact of Pharmacokinetics and Pharmacodynamics*

8:30 – 10:15   Driving Under the Influence of Drugs and Discussion
                       Christine Moore (Immunalysis Corporation).

10:15 – 10:30   Break

10:30 – 12:15   Drug Facilitated Sexual Assault and Discussion
                       Dan Anderson (Toxicologist, Los Angeles County Coroner's Office)

12:15 – 1:15   Lunch

1:15 – 3:00   Post-mortem Pitfalls and Discussion
                       Tim Rohrig (Sedgwick County Regional Forensic Science Center)

3:00 – 3:15   Break and Close-out
                       Todd Zdorkowski (MFRC)

Impression Evidence

The Impression Evidence classes include:
- Advanced Palm Print Comparison Techniques
- Detection, Recovery, and Examination of Footwear Impression Evidence
- Examination and Comparison of Tire Track Impression Evidence

These classes provide technical and informational background in the classroom but stress hands-on exercise as the preferred delivery method. Partners or co-sponsors include:
- International Association for Identification
- Ron Smith & Associates

These classes were delivered at the USDOE Ames Laboratory and on the campus of Iowa State University.

Advanced Palm Print Comparison Techniques

Announcement:	Advanced Palm Print Comparison Techniques
Dates:	August 6-9, 2007
Location:	Iowa State University, Ames, IA

Overview

This three-day course is designed for those who examine latent print evidence. It will benefit examiners at all levels of expertise, from new trainees to latent print supervisors. The general purpose of this class is to improve the ability of latent print examiners to conduct palm print searches and comparisons; but special attention is given to the problem of conducting palm print examinations in a time- and cost-effective manner.

The class is structured around a sequence of practical exercises. Students will work with exercise materials that match their initial levels of expertise and will progress through more difficult assignments. The exercises will teach students to recognize the "position orientation clues" that appear in palm prints and can speed their examinations. The palm print comparison techniques taught in the class can be applied immediately. They are appropriate in both law enforcement and crime laboratory settings; and for use with both manual and automated palm print searching systems. The student will learn to "search smart" instead of "searching hard" by placing the questioned latent print in the correct search position before the actual search begins. They will accomplish this by learning about ridge flow, crease, and latent print shape position orientation clues which exist in the palm.

The training has been approved for 24 hours of Continuing Education Credits (required for IAI Latent Print Certification and Re-certification). Certificates of attendance, authorized by the International Association for Identification, will be awarded to each student successfully completing the seminar.

Learning Objectives

If the student actively participates and follows the instructor's directions as provided, it is expected that they will be able to accurately analyze a partial latent palm print and determine not only which hand (right or left) made the print but also the correct area of the hand (thenar, hypothenar, or interdigital) and the correct up and down position of the print. These factors in combination will enable the student to conduct searches of partial latent prints in a much more efficient and accurate manner, resulting in significant increases in production and accuracy.

Teaching Team
- Ron Smith, President of Ron Smith & Associates, Inc.

Agenda

Day 1

8:00 – 8:30	Course Registration and Introduction of Class and Instructor(s)
8:30 – 9:00	Introduction to Material and Training Concepts
9:00 – 12:00	Lecture: Ridge Flows in the Palm
1:00 – 2:15	Practical Exercise #1: Proper Positioning of Partial Palm Prints Based upon Ridge Flow Features
2:15 – 3:00	Review Results: Practical Exercise #1
3:00 – 4:00	Practical Exercise #2: Proper Positioning of Partial Palm Prints Based upon Ridge Flow Features (increased difficulty)
4:00 – 5:00	Review Results: Practical Exercise #2 and Overall Review Day 1

Day 2

8:00 – 11:00	Lecture: Crease Formations in the Palm
11:00 – 12:00	Lecture: Latent Print Shapes, Ridge Flow and Crease Clues Appearing in the Second and Third Joints of Fingers"
1:00 – 2:15	Practical Exercise #3: Proper Positioning of Partial Palm Prints Based upon Crease Formations Found in the Palm
2:15 – 3:00	Review Results: Practical Exercise #3
3:00 – 4:00	Practical Exercise #4: Proper Positioning of Partial Palm Prints Based upon Ridge Flow Features (increased difficulty)
4:00 – 5:00	Review Results: Practical Exercise #4 and Overall Review Day 2

Day 3

8:00 – 10:00	Practical Exercise #5: Palm Orientation Clues
10:00 – 12:00	Review Results: Practical Exercise #5
1:00 – 3:30	Practical Exercise #6: Comprehensive
3:30 – 4:30	Review Results: Practical Exercise #6
4:30 – 5:00	Wrap-up and Presentation of Certificates

Detection, Recovery, and Examination of Footwear Impression Evidence

Announcement:	Detection, Recovery, and Examination of Footwear Impression Evidence
Dates:	March 26-30, 2007
Location:	USDOE Ames Laboratory, Ames, IA

Overview

This 4½ -day course is designed for those who examine footwear impression evidence and must provide written reports and expert testimony in court on their observations and conclusions. The course provides an understanding of basic footwear manufacturing techniques as they assist in the evaluation of class characteristics. Both wear characteristics and random individual characteristics are covered. Students will conduct approximately 35-40 exercises, of which at least 22 are actual case examinations. These exercises will teach fundamental examination methodology and observations and provide the student with experience examination results that range from identifications to non-identifications. The class also addresses the creation of exemplar impressions of suspected footwear for the examination, contusion impressions, shoe sizing, hands-on chemical enhancement of impressions, barefoot impressions, and a thorough review of the photography, casting, and lifting methods.

Learning Outcomes
- The student will understand the basic concepts of forensic footwear impression evidence
- The student will understand the proper and most successful methods for recovering footwear impression evidence, including photographic procedures and various lifting and casting techniques
- The student will understand different methods to enhance footwear impressions
- The student will understand different shoe sizing variables and the applications of shoe sizing problems in casework
- The student will be introduced to basic footwear manufacturing techniques and provided with examples of how knowledge of those techniques may assist or otherwise provide significant information in an examination
- The student will understand the proper approach to footwear comparisons and examination procedures
- The student will understand correct methods of reporting examination results
- The student will understand methods of preparation for trial and demonstration of findings

Teaching Team
- William J. Bodziak

<u>Agenda</u>

Day 1

8:00 – 9:00	Manufacturing: Molds & modern molded footwear
9:00 – 10:00	Evaluation and comparison of class characteristics
10:00 – 11:00	Class characteristic conclusions and forensic significance
12:00 – 1:00	Lunch
1:00 – 2:00	Wear and individual characteristics
2:00 – 3:00	Individual & wear characteristics exercises
3:00 – 4:00	Report writing and scale of conclusions
4:00 – 5:00	Case exercises

Day 2

8:00 – 9:00	Electrostatic lifting and other lifting methods and materials Lifting exercises
9:00 – 10:00	Manufacturing of footwear – cutting processes, manufacturing videos
10:00 – 11:00	Class characteristics of cut footwear
11:00 – 12:00	Photography of impression evidence
12:00 – 1:00	Lunch
1:00 – 2:00	Casting impression evidence
2:00 – 4:00	Class photo; photography and casting exercise outdoors
4:00 – 5:00	Case exercises

Day 3

8:00 – 9:00	Work session
9:00 – 10:00	Footwear sizing issues; exercises
10:00 – 11:00	Case exercises
11:00 – 12:00	Work session
12:00 – 1:00	Lunch

1:00 – 2:00	Chemical enhancement
2:00 – 3:00	Blood chemical enhancement lab
3:00 – 4:00	Work session
4:00 – 5:00	Case reviews

Day 4

8:00 – 9:00	Case exercises
9:00 – 10:00	Case reviews
10:00 – 11:00	Work session
11:00 – 12:00	Court preparation and testimony
12:00 – 1:00	Lunch
1:00 – 2:00	Known shoes; methods of making impressions
2:00 – 3:00	Work session
3:00 – 4:00	Case reviews
4:00 – 5:00	Footwear databases and reference materials

Day 5

8:00 – 9:00	Barefoot impression evidence
9:00 – 10:00	Contusions
10:00 – 11:00	Interesting cases; test
11:00 – 12:00	Administrative; Wrap-up

Examination and Comparison of Tire Track Impression Evidence

Announcement:	Examination and Comparison of Tire Track Impression Evidence
Dates:	October 2-4, 2007
Location:	USDOE Ames Laboratory, Ames, IA

Overview

This three-day course is designed to assist examiners in using proper techniques for the examination and comparison of tire track evidence. The class will describe data available to examiners in the form of DOT numbers, mold numbers, symbols, logos, wear bars, wear indicators, and tire nomenclature. It will provide an overview of the tire manufacturing process, as well as obtaining suspect tires, how to take test impressions, the tire track comparison process, and the examiner's decision-making process. The class closes with sections on case note preparation, report writing, courtroom testimony, and the use of tire track database systems.

The training has been approved for 24 hours of Continuing Education Credits (required for IAI Certification and Re-certification). Certificates of attendance, authorized by the International Association for Identification, will be awarded to each student successfully completing the class.

Teaching Team
- Dwane Hildebrand, Ron Smith & Associates, Inc.

Agenda

1. Introduction

2. A history lesson
   Objectives:
   - To be familiar with how interest and techniques in the use of footwear and tire track/mark evidence have evolved over the years
   - To know the value of footwear and tire track/mark evidence in criminal investigations
   - To have a general knowledge in the types of tracks/marks encountered and methods available for their recovery and comparison

3. The sidewall story

4. What do all these numbers and letters mean?
   Objectives:
   - To understand the concepts of and the terms used in describing "class" and "individual/accidental" characteristics associated with various types of comparative examinations
   - To know and understand how these concepts and terms are applied to the different types of tracks/marks encountered in footwear and tire track/mark examinations
   - To be able to appropriately use terminology [both in written and verbal forms] related to the examination of footwear and tire track/mark impressions

5. Understanding basic manufacturing processes
   Objectives:
   - To be familiar with the basic tire construction methods
   - To understand the different types of tread construction and the potential importance it could have on the identification process
   - To know how design features in tire treads are used in comparative examinations
   - To understand how manufacturing techniques can contribute in the decision making process of an examination
   - To be knowledgeable of the terminology used in describing various aspects of tires as they relate to the manufacturing process

6. Why tire track evidence is overlooked??
   Objectives:
   - To understand the importance and correct procedures for correct photographic documentation of track/mark evidence at crime scenes, including the use of various lighting techniques, contrast filters, and contrast films
   - To understand the considerations and applications of both black-and-white and color photography of track/mark evidence
   - To understand the theory of and correct procedures for examination quality photographs
   - To understand the various lifting and casting methods of recovering and preserving track/mark evidence at a crime scene and in the laboratory
   - To know how to electrostatically recover track/mark evidence by "DELK" and "ESDA"
   - To know how to prepare and cast tire tracks/marks using a stone material
   - To understand why stone materials, not plasters or plaster of Paris, is recommended for the casting of footwear and tire track/mark impressions

7. Understanding comparison terms

8. Pitch sequence

9. Comparative examinations
   Objectives:
   - To know how to prepare questioned and known tracks/marks for comparative examinations
   - To understand the importance and need for comparative standards
   - To know several different methods of preparing comparative standards, including transparent and opaque two-dimensional impressions, and three-dimensional methods
   - To understand the different methods of conducting comparative examinations

10. Decision making in the comparison process
    Objectives:
    - To clearly understand the different characteristics involved in the identification of a questioned track/mark to a known object
    - To know how different factors can affect track/mark registration in questioned and known
    - To understand the relative importance of class, individual and wear characteristics in the identification process
    - To understand principles associated with stating an opinion on the "Did Not Make - Did Make" decision line

11. Case note preparation and report writing
    Objectives:
    - To know the proper file documentation through notes and photographs that are required in the area of tire track/mark examinations
    - To understand the purpose of proper report writing terminology in tire track/mark examinations
    - To know how to report the various levels of opinions encountered in the decision statements

12. Court testimony
    Objectives:
    - To know the proper foundation for acceptance as an expert witness in the area of tire track/mark examination
    - To be able to effectively present testimony in the area of tire track/mark examinations and identifications
    - To know the different ways to prepare tire track/mark evidence for use as demonstrative evidence in a court of law

13. Tire track database systems
    Objectives:
    - To know the value of track/mark-related information that can be obtained from a set of tire tracks/marks

Trace Evidence

The Trace Evidence classes include:
- Analysis of Low Explosives
- Basic Hair Examination and Analysis
- Forensic Textile Fiber Examinations and Comparisons

In general, these classes stress a hands-on, in the laboratory delivery. Partners or co-sponsors include:
- McCrone College of Microscopy
- Midwest Association of Forensic Scientists
- West Virginia Forensic Initiative

The instructors were drawn from the community of forensic scientists. These include recognized subject matter experts from:
- Indiana-University-Purdue University-Indianapolis
- McCrone College of Microscopy
- Michigan State Police Crime Laboratory system
- Missouri State Highway Patrol Crime Laboratory System
- West Virginia Forensic Initiative

Specialized laboratory facilities were required for the delivery of these classes:
- Microscopy teaching facilities at the McCrone College of Microscopy in Chicago, IL for the Fiber and Hair classes
- Hybrid microscopy-chemistry laboratories on the Michigan State University campus for the Low Explosives class

Analysis of Low Explosives

Announcement: Forensic Analysis of Low Explosives
Dates: June 23-27, 2008
Location: Michigan State University, East Lansing, MI

Overview

This class is intended for those who are new to the examination of explosives, and will provide a practical introduction to laboratory examinations. The topics to be covered include explosives nomenclature, the chemistry of pre- and post-blast low explosive materials, the characteristics of exploded devices, and laboratory analyses. Particular emphasis will be placed on extraction protocols and the subsequent examination of extracted materials by polarized light microscopy and infrared spectroscopy. Color tests, ion chromatography, and elemental techniques will also be discussed.

Teaching Team

- Chris Bommarito, Michigan State Police; President, MAFS
- John Goodpaster, PhD, Indiana-University-Purdue-University-Indianapolis
- William Randle, Missouri State Highway Patrol Crime Laboratories
- Dave Szymanski, PhD, Michigan State University

Agenda

Day 1

History of Explosives

Explosives Nomenclature (lecture and exercise)

Types and Chemistry of Energetic Materials (lecture)

Detonating Explosives (lecture)

Black Powder (lecture and lab)

Day 2

Black Powder Substitutes (lecture and lab)

Smokeless Powder (lecture and lab)

Post Blast Analytical Scheme (lecture)

Color Spot Tests (lecture and lab)

Microscopy (lecture and lab)

Day 3

Microscopy, continued (lecture and lab)

Fourier Transform Infrared (lecture)

Gas Chromatography Mass Spectrometry (lecture)

Ion Chromatography (lecture)

Elemental Analysis (lecture)

Laboratory Exercises – Examination of Known Components & Mixtures

Day 4

Laboratory Exercise, continued – Results and Conclusions

Laboratory Exercise – Examination of Unknown Components and Mixtures

Day 5

Additional considerations and examinations

Report Writing

Certificates and close

Basic Hair Examination and Analysis

Announcement:	Basic Hair Examination and Analysis
Dates:	June 28-29, 2007
Location:	McCrone College of Microscopy, Chicago, IL

<u>Overview</u>

Hair is one of the most common types of evidence found at a crime scene. Its ubiquitous nature affords forensic scientists the opportunity to provide important information to investigations. In the past, hair analysis strictly involved microscopic examinations. These examinations combine a variety of macroscopic and microscopic characteristics to determine possible associations between unknown hairs and known samples. With the advent of DNA analysis, additional information can now be gained through hair examinations.

This course is designed for trace analysts but may also be useful for DNA analysts. It will provide participants with the knowledge and skill required to assess hair and its potential for DNA analysis. Portions of the class will describe the anatomy and growth of hair, its characteristics, hair collection and processing, and the legal issues associated with the analysis of hair. Other portions will provide participants with an introduction to basic microscopy and the use of microscopy for hair analysis. This is intended to enhance participants' knowledge of hair and their skill in microscopy.

<u>Teaching Team</u>

- Richard Bisbing, McCrone Associates, Inc.

Agenda

1. Introduction to the Biology and Chemistry of Hairs
    Objectives:
    - Understand the fundamental biology and chemistry of hair
    - Understand how hair grows
    - Understand the implications of the above for forensic hair examination.

2. Recovery and Collection of Hairs
    Objectives:
    - Describe the factors which determine how hairs should be recovered and collected
    - Demonstrate a range of techniques and approaches used in the collection of hairs
    - Understand the factors which determine what are adequate and representative known (exemplar) and reference samples

3. Microscopy
    Objectives:
    - Describe and understand the different types of light microscopes, their constituent parts and their application for hair examination
    - Demonstrate a range of techniques used in the preparation of hairs for microscopic examination
    - Understand the factors determining choice of mountants

4. Familiarization with Stereomicroscope
    Objectives:
    - Understand the components of the Stereomicroscope and Compound Light Microscope
    - Understand the use of the Stereomicroscope and Compound Light Microscope
    - Understand setting up Koehler illumination

5. Hair Mounting
    Objectives:
    - Understand mounting mediums
    - Understand mounting hair samples

6. Structure of Hairs-Differentiation of Animal and Human Hairs
    Objectives:
    - Describe the morphological structure of hair
    - Understand the differences between non-human animal and human hairs
    - Describe the types of microscopic features used to describe animal hairs
    - Understand the value and limitations of animal hairs in the forensic context

7. Animal Hair versus Human Hair
    Objectives:
    - Understand the general characteristics of a animal hair
    - Understand the general characteristics of a human hair
    - Understand use of the Stereomicroscope to visualize the characteristics
    - Understand use of the Compound or Comparison Light Microscope to visualize the characteristics

8. General Animal and Human Characteristic Differences

9. Differentiation of hairs of different body (somatic) origin
   Objectives:
   - Describe the features of hairs from different body origin
   - Understand the limitations of body origin determination
   - Understand the potential forensic value of body origin determination

10. Differentiation of hairs of different racial origin
    Objectives:
    - Describe the features of hairs from different racial groups
    - Understand the limitations of racial origin determination

11. Microscopic features of human hair
    Objectives:
    - Describe the classes of microscopic features of human hair
    - Demonstrate the techniques and approaches used in the routine forensic examination of human hairs
    - Recognize acquired characteristics

12. DNA Testing as Part of a Holistic Protocol for Hair Examination
    Objectives:
    - Understand the current status of nuclear and mitochondrial DNA testing in relation to hairs
    - Understand the factors to be considered in determining when to conduct DNA and mt-DNA testing
    - Understand the holistic nature of the hair examination process and the need for a sequential approach to testing
    - Understand the presentation of n-DNA and mt-DNA evidence

13. Root Classifications/DNA
    Objectives:
    - Understand the basic root characteristics of the hair (anagen, catagen, and telogen)
    - Understand use of the Stereomicroscope to visualize the roots of the hair
    - Understand use of the Compound or Comparison Light Microscope to visualize roots

14. Root Characteristics for DNA Determinations

15. Legal Considerations
    Objectives:
    - Understand the current status of admissibility of hair testimony in court
    - Understand the factors to be considered in determining if/when hair analysis meets Frye requirements for admissibility
    - Understand the factors to be considered in determining if/when hair analysis meets Daubert requirements for admissibility
    - Understand the use of statistics and its influence on hair analysis admissibility.

Forensic Textile Fiber Examinations and Comparisons

Announcement: Forensic Textile Fiber Examinations and Comparisons
Dates: June 25-27, 2007
Location: McCrone College of Microscopy, Chicago, IL

Overview

This course is designed for trace analysts and others who examine and compare textile fibers. It will enhance the participants' knowledge of textile fibers and their skill in the microscopic examination and comparison of textile fibers. The class opens with a brief lecture-overview, but is primarily structured around laboratory demonstrations and participant exercises.

Teaching Team
- Max Houck, West Virginia Forensic Initiative

Agenda
1. Overview of Forensic Textile Examination
   - Variation in Textiles
   - Textiles and Trace Evidence

2. Textile Production
   - Short Film on Textile Production

3. Pigments and Dyes

4. Stereomicroscopy
   - Laboratory 1: Mounting and Manipulating Fibers

5. Brush up on Polarized Light Microscopy
   - Laboratory 2: PLM Primer

6. Natural Filbers
   - Plant and Animal
   - Laboratory 3: Fibers

7. Manufactured and Synthetic Fibers

8. Formation of Synthetic Fibers

9. Textile Fabrics

10. Microscopic Characteristics

11. Fiber Cross-sections
    - Laboratory 4: Cross-sections

12. Optical Properties of Man-made Fibers (One-Polar)
    - Laboratory 5: Properties of Man-made Fibers (One-Polar)

13. Optical Properties of Man-Made Fibers (Crossed-Polars)
    - Laboratory 6: Properties of Man-made Fibers (Crossed-Polars)

14. Analytical Schemes for Fiber Analysis
    - Laboratory 7: Analytical Schemes

15. Color and its Importance to Fiber Analysis
    - Laboratory 8: Color

16. Reference Collections

17. Evidential Significance: Transfer and Persistence Studies

18. Testimony: How specific can you get?

19. Questions and Course Evaluation

For More Information

For current class information, please contact the subject matter expert(s) listed.

For more information about the Midwest Forensics Resource Center's Training and Professional Development program, please contact:

Richard Todd Zdorkowski, Associate Center Director
Midwest Forensics Resource Center, Ames Laboratory
128 Spedding Hall
Ames, Iowa 50011-3020
Phone: (515) 294-5640
FAX: (515) 294-4748
Email: zdorkowski@ameslab.gov
Website: http://www.mfrc.ameslab.gov

MFRC

Midwest Forensics Resource Center

USDOE Ames Laboratory
130 Spedding Hall
Ames, IA 50011-3020
Phone: 515-296-6372, FAX: 515-294-4748
mfrc@ameslab.gov
http://www.mfrc.ameslab.gov